AMENDMENTS TO THE CLAIMS

Please rewrite the claims as set forth below.

New Claims 55 – 62 have been added. No claims have been canceled.

1. (Original) An apparatus for automated excision of one or more samples from a sample media, comprising:

a. a device for electronically capturing one or more traits respectively associated with one or more samples present in a sample media, and

b. a microprocessor linked to said device for analyzing one or more of said electronically captured traits of one or more of said samples, wherein said microprocessor accesses a database of reference traits and compares at least one electronically captured trait of at least one sample against one of said reference traits in said database of reference traits, wherein the microprocessor identifies one or more samples of interest as a result of comparing at least one of said electronically captured traits against one of said reference traits.

2. (Original) The apparatus of claim 1, further including a robotic excision tool coupled to said microprocessor, wherein said microprocessor commands said robotic excision tool to excise at least one sample of interest.

3. (Original) The apparatus of claim 2, wherein said microprocessor commands said robotic excision tool to irrigate said sample media with fluid from a fluid reservoir.

4. (Original) The apparatus of claim 2, wherein said robotic excision tool includes a plurality of excision cutters.

5. (Original) The apparatus of claim 4, wherein said microprocessor associates at least one said sample of interest with one of said plurality of excision cutters and commands said robotic excision tool to select one associated excision cutter for excision of the associated sample.

6. (Original) The apparatus of claim 2, wherein said microprocessor identifies location coordinates for said sample of interest in said sample media.

7. (Original) The apparatus of claim 6, wherein said microprocessor commands said robotic excision tool to excise said sample of interest at said coordinates.

8. (Original) The apparatus of claim 6, wherein said microprocessor identifies said location coordinates by deriving and applying calibration factors from comparison of one or more of said electronically captured traits with one or more of said reference traits.

9. (Original) The apparatus of claim 1, wherein said sample media includes a two-dimensional electrophoresis gel sample.

10. (Original) The apparatus of claim 1, further including an illuminating source for illuminating said sample media.

11. (Original) The apparatus of claim 1, wherein said device is a camera and wherein said trait is an optical trait.

12. (Original) The apparatus of claim 1, wherein said sample media is located on a substrate.

13. (Original) The apparatus of claim 12, wherein said substrate is a stretch-resistant substrate.

14. (Original) The apparatus of claim 12, wherein said substrate contains reference marks.

15. (Original) The apparatus of claim 1, wherein said sample media contains fluorophores.

16. (Original) The apparatus of claim 1, wherein one or more of said samples contains fluorophores.

17. (Original) The apparatus of claim 2, wherein said microprocessor commands said robotic excision tool to deposit said excised sample of interest into a sample receptacle.

18. (Original) The apparatus of claim 17, wherein said excised sample is deposited into said sample receptacle along with a volume of fluid from a fluid reservoir.

19. (Original) The apparatus of claim 17, wherein said microprocessor commands said robotic excision tool to excise and deposit a plurality of said samples of interest sequentially into a plurality of said sample receptacles.

20. (Original) The apparatus of claim 17, wherein said microprocessor commands said robotic excision tool to pick up and place a cap on said sample receptacle.

21. (Original) The apparatus of claim 17, where said robotic excision tool has means for sequentially processing a plurality of said sample media.

22. (Original) The apparatus of claim 17, wherein aid robotic excision tool has means for sequentially processing a plurality of said sample receptacles.

23. (Original) The apparatus of claim 2, wherein said robotic excision tool has an excision cutting tip containing a conical cavity.

24. (Original) The apparatus of claim 2, wherein said robotic excision tool has an excision cutting tip that bears a sharpened cutting edge.

25. (Original) The apparatus of claim 24, wherein said sharpened cutting edge is beveled.

26. (Original) The apparatus of claim 2, wherein said robotic excision tool has an excision cutting tip with a shoulder surface and a cutting edge, said shoulder being set back vertically from said cutting edge.

27. (Original) The apparatus of claim 2, wherein said robotic excision tool has an excision cutting tip that is fixed on said excision tool by semi-permanent means.

28. (Original) The apparatus of claim 2, wherein said robotic excision tool has an excision cutting tip that is interchangeable.

29. (Original) The apparatus of claim 28, wherein said robotic excision tool has means to grip and eject said interchangeable tip.

30. (Original) The apparatus of claim 28, wherein said robotic excision tool includes means for automatically disposing of said interchangeable tip.

31. (Original) The apparatus of claim 29, wherein said microprocessor commands said robotic excision tool to grip and eject said interchangeable tip.

32. (Original) The apparatus of claim 29, wherein said means to grip and eject said interchangeable tip includes a cylindrical inflatable cuff, an ejection spring, and means to control pressure to and from said inflatable cuff from pressure sources.

33. (Original) The apparatus of claim 32, wherein said pressure is fluid pressure.

34. (Original) The apparatus of claim 32, wherein said pressure is gas pressure.

35. (Original) The apparatus of claim 2, wherein said robotic excision tool has means to eject said excised sample of interest into a sample receptacle.

36. (Original) The apparatus of claim 35, wherein said means cycles and discharges fluid from a fluid reservoir through said robotic excision tool by means of a pump.

37. (Original) The apparatus of claim 36, wherein said microprocessor commands said pump to sequentially discharge, withdraw, or further discharge said fluid through said robotic excision tool.

38. (Original) The apparatus of claim 2, wherein said microprocessor commands said robotic excision tool to displace laterally after contact with said sample of interest.

39. (Original) A method for automating the excision of one or more samples from a sample media, comprising the steps of:

a. capturing electronically one or more traits respectively associated with one or more samples present in a sample media,

b. comparing one or more of said captured traits against a database of reference traits,

c. as a result of step b), selecting a sample of interest from one or more samples present in said sample media,

d. establishing reference coordinates of said sample of interest,

e. associating a coring tool with said sample of interest, and

f. automatically excising said sample of interest with said coring tool by reference to said coordinates.

40. (Original) The method of claim 39, further including the step of recapturing said one or more traits and comparing the captured traits against the recaptured traits to derive a calibration factor.

41. (Original) The method of claim 39, further including the step of mounting said sample media on a substrate that contains reference marks.

42. (Original) The method of claim 39, wherein said comparing of step b) includes comparing at least one of the following traits against a database of reference traits: quantitative ratios of match samples, sample integrated intensities, sample molecular weight, sample isoelectric point, sample area, or sample density.

43. (Original) The method of claim 39, further including the step of illuminating the sample media with ultraviolet light,

44. (Original) The method of claim 39, further including the steps of automatically disposing of the coring tool and selecting a new coring tool.

45. (Original) The method of claim 39, further including the step of automatically cleaning the coring tool.

46. (Original) The method of claim 39, wherein step e) further includes selecting a coring tool from a plurality of coring tools.

47. (Original) The method of claim 39, further including the step of depositing said excised sample of interest into a sample receptacle.

48. (Original) The method of claim 47, further including the step of automatically depositing a plurality of said excised samples of interest into a plurality of sample receptacles.

49. (Original) The method of claim 47, further including the step of ejecting said excised sample of interest by discharging fluid from a fluid reservoir associated with said coring tool into said sample receptacle.

50. (Original) The method of claim 39, further including the step of providing a coring tool with a conical coring cavity.

51. (Original) The method of claim 39, further including the step of providing a coring tool that is interchangeable.

52. (Original) The method of claim 51, further including the step of gripping said interchangeable coring tool through inflation of a cylindrical inflatable cuff inside the coring tool by liquid or gas pressure.

53. (Original) The method of claim 52, further including the step of ejecting said interchangeable tool by releasing said pressure inside said inflatable cuff and applying force to said interchangeable tool with an ejection spring.

54. (Original) The method of claim 39, further including the step of providing a sample media that is a two-dimensional gel electrophoresis sample.

55. (New) An apparatus for automated excision of one or more samples from a sample media, comprising:

a. a device for electronically capturing one or more traits respectively associated with one or more samples present in a sample media,

b. a microprocessor linked to said device for analyzing one or more of said electronically captured traits of one or more of said samples, wherein said microprocessor accesses a database of reference traits and compares at least one electronically captured trait of at least one sample against one of said reference traits in said database of reference traits, wherein the microprocessor identifies one or more samples of interest as a result of comparing at least one of said electronically captured traits against one of said reference traits, and

c. a robotic excision tool coupled to said microprocessor, wherein said microprocessor commands said robotic excision tool to excise at least one sample of interest.

56. (New) An apparatus for automated excision of one or more samples from a sample media, comprising:

a. a device for electronically capturing one or more traits respectively associated with one or more samples present in a sample media,

b. a microprocessor linked to said device for analyzing one or more of said electronically captured traits of one or more of said samples, wherein said microprocessor accesses a database of reference traits and compares at least one electronically captured trait of at least one sample against one of said reference traits in said database of reference traits, wherein the microprocessor identifies one or more samples of interest as a result of comparing at least one of said electronically captured traits against one of said reference traits, and

c. a robotic excision tool coupled to said microprocessor, wherein said microprocessor commands said robotic excision tool to excise at least one sample of interest,

wherein said microprocessor commands said robotic excision tool to irrigate said sample media with fluid from a fluid reservoir.

57. (New) An apparatus for automated excision of one or more samples from a sample media, comprising:

a. a device for electronically capturing one or more traits respectively associated with one or more samples present in a sample media, and

b. a microprocessor linked to said device for analyzing one or more of said electronically captured traits of one or more of said samples, wherein said microprocessor accesses a database of reference traits and compares at least one electronically captured trait of at least one sample against one of said reference traits in said database of reference traits, wherein the microprocessor identifies one or more samples of interest as a result of comparing at least one of said electronically captured traits against one of said reference traits, and

c. a robotic excision tool coupled to said microprocessor, wherein said microprocessor commands said robotic excision tool to excise at least one sample of interest,

wherein said robotic excision tool has an excision cutting tip that is interchangeable and has means to grip and eject said interchangeable tip and said microprocessor commands said robotic excision tool to grip and eject said interchangeable tip.

58. (New) An apparatus for automated excision of one or more samples from a sample media, comprising:

a. a device for electronically capturing one or more traits respectively associated with one or more samples present in a sample media, and

b. a microprocessor linked to said device for analyzing one or more of said electronically captured traits of one or more of said samples, wherein said microprocessor accesses a database of reference traits and compares at least one electronically captured trait of at least one sample against one of said reference traits in said database of reference traits, wherein the microprocessor identifies one or more samples of interest as a result of comparing at least one of said electronically captured traits against one of said reference traits, and

c. a robotic excision tool coupled to said microprocessor, wherein said microprocessor commands said robotic excision tool to excise at least one sample of interest,

wherein said robotic excision tool has an excision cutting tip that is interchangeable and has means to grip and eject said interchangeable tip, wherein said means

includes a cylindrical inflatable cuff, an ejection spring, and means to control pressure to and from said inflatable cuff from pressure sources.

59. (New) The apparatus of claim 58, wherein said pressure is fluid pressure.

60. (New) The apparatus of claim 58, wherein said pressure is gas pressure.

61. (New) A method for automating the excision of one or more samples from a sample media, comprising the steps of:

a. capturing electronically one or more traits respectively associated with one or more samples present in a sample media,

b. comparing one or more of said captured traits against a database of reference traits,

c. as a result of step b), selecting a sample of interest from one or more samples present in said sample media,

d. establishing reference coordinates of said sample of interest,

e. associating a coring tool with said sample of interest,

f. automatically excising said sample of interest with said coring tool by reference to said coordinates,

g. providing a coring tool that is interchangeable, and

h. gripping said interchangeable coring tool through inflation of a cylindrical inflatable cuff inside the coring tool by liquid or gas pressure.

62. (New) The method of claim 61, further including the step of ejecting said interchangeable tool by releasing said pressure inside said inflatable cuff and applying force to said interchangeable tool with an ejection spring.